

**PATENT**

**01AB121/ALBRP112USB**

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Date: December 4, 2006

/Casey L. Martin/  
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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re patent application of:

Appellant(s): Frederick M. Discenzo, *et al.*

Examiner: Aaron C. Perez Daple

Serial No: 09/965,545

Art Unit: 2154

Filing Date: September 27, 2001

Title: MOTORIZED SYSTEM INTEGRATED CONTROL AND  
DIAGNOSTICS USING VIBRATION, PRESSURE, TEMPERATURE,  
SPEED, AND/OR CURRENT ANALYSIS

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**REPLY BRIEF**

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Dear Sir:

Appellants' representative submits this brief in connection with an appeal of the above-identified patent application. In the event any fees may be due the Commissioner is authorized to charge such fees to Deposit Account No. 50-1063 [ALBRP112USB].

**I. Rejection of Claims 1, 19 and 22 Under 35 U.S.C. §102(e)**

Claims 1, 19, and 22 stand rejected under 35 U.S.C. §102(e) as being anticipated by McConnell *et al.* (U.S. 6,002,232). It is respectfully requested that this rejection be reversed for at least the following reasons. McConnell *et al.* fails to disclose each and every element of the subject claims.

As stated in the Appeal Brief, the subject invention relates to systems and methods for controlling and diagnosing the health of a machine, and more particularly, to systems and methods for controlling and diagnosing motorized systems according to vibration, pressure, temperature, speed, and/or current analysis. Independent claim 1 sets forth *a method for controlling a motorized system comprising: measuring an attribute of the motorized system, the attribute comprises at least one of vibration, speed, temperature, pressure, and current in the motorized system; diagnosing a health of the motorized system based on the measured attribute; providing a diagnostics signal based on the diagnosed health; prognosing a state of the motorized system based at least in part on the at least one sensed attribute and/or the diagnosed state; providing a control signal based at least in part on the diagnosed health and the prognosed state; and providing a feedback operation that adjusts the control signal to extend the lifetime of the motorized system to a specific time horizon.* Independent claims 19 and 22 recite similar aspects.

The Examiner's Answer maintains that aforementioned claimed aspects are inherent in McConnell *et al.*, contending that “a specific time horizon recited in independent claims is broad limitation (*sic*) which includes various interpretations such as merely ‘extending mission completion.’” Appellant’s representative respectfully disagrees with this casual dismissal. Passages from this reference are cited to show that McConnell *et al.* discloses using feedback to reduce unwanted vibration in a system, and thereby increase machine life. However, while vibration reduction might be beneficial for *e.g.* reducing wear on machine components, it must be emphasized that such an arrangement would not inherently satisfy the claimed invention. The subject specification is replete with instances supporting the claimed aspects, *e.g.*, at page 24, line 26 *et seq.*, where a *controller* responds to a *diagnostic signal* and sends a *control signal* to a *motor drive* to reduce cavitation to a prescribed low level to meet process

constraints and *to extend machinery lifetime to **a specific time horizon** (e.g., to allow for mission completion)*. It is therefore readily apparent that the subject claims set forth a specific interaction of components, *i.e.* feedback-enabled control of a system, for obtaining a particular goal, *i.e.* to extend operating lifetime to a specific time horizon, rather than merely extending operating lifetime in general, as is the subject of McConnell *et al.* To illustrate this important distinction, while McConnell *et al.*'s vibration reduction may generally add additional service time to the disclosed system, this system may nevertheless fail in the middle of an important production operation. Whereas, the subject invention, by correlating diagnostic and control signals as claimed, may enable a disabled machine to reach a time horizon where the production operation is completed. This would thereby allow for a suitable maintenance cycle without disturbing production. Clearly, no such inventive aspects as claimed are disclosed or suggested by McConnell *et al.*

The Examiner's Answer further contends that Appellant's statement in the Appeal Brief that "McConnell *et al.* does not disclose ***prognosing a state of a motorized system based on a diagnosed state of the system, but rather discusses employing a predicted value as determined from a table lookup*** to select a command signal that can be applied to a system to be diagnosed subsequently" is based on a limitation not found in the claims. However, Appellant's argument has been misconstrued. The passage quoted in the Examiner's Answer goes on to state that "*only after application of the command signal* does McConnell *et al.* employ any diagnostic action." Therefore, the issue remains (unaddressed in the Examiner's Answer) that McConnell *et al.* does not disclose ***prognosing a state of a motorized system based on a diagnosed state of the system***, but rather discusses employing a predicted value as determined from a table lookup to select a command signal that can be applied to a system to be diagnosed subsequently.

With respect to Appellant's argument that McConnell *et al.* is silent with regard to the aspect of "***a feedback operation that adjusts the control signal to extend the lifetime of the motorized system to a specific time horizon***," the Examiner's Answer again contends that this aspect is inherent in the reference. In support thereof, passages are again cited that disclose the vibration reduction aspects of McConnell *et al.*, and a reiteration of the arguments is presented that such would inherently extend the lifetime of

a motorized system. Appellant maintains that, for at least the reasons presented *supra*, McConnell *et al.* can only be construed as merely extending the operating lifetime of a system in general, and does not disclose or suggest anything that would extend operating lifetime to a *specific time horizon*, as set forth in the independent claims. It is again pointed out that:

“Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *Mehl/Biophile Int’l Corp. v. Milgraum*, 192 F.3d 1362, 1365, 52 USPQ2d 1303, 1305 (Fed. Cir. 1999), reh’g denied, 1999 U.S. App. LEXIS 31386 (Fed. Cir. Oct. 37, 1999) (*quoting In re Oelrich*, 666 F.2d 578, 581, 212 USPQ323, 326 (CCPA 1981)).

The mere fact that a system can be calibrated to reduce vibration does not inherently disclose or suggest providing control signal adjustments that extend system operation lifetime to a *specific time horizon*. Thus, McConnell *et al.* fails to describe such aspects of Appellants’ claimed invention.

In view of the foregoing, it is readily apparent that McConnell *et al.* does not anticipate or make obvious the Appellants’ invention as recited in the subject claims. Therefore, this rejection should be reversed.

## **II. Rejection of Claims 1-5, 18-22, 24, 30, 35-38, 40 and 41 Under 35 U.S.C. §102(e)**

Claims 1-5, 18-22, 24, 30, 35-38, 40 and 41 stand rejected under 35 U.S.C. §102(e) as being anticipated by Madhavan (U.S. 6,004,017). Reversal of this rejection is respectfully requested for at least the following reasons. Madhavan does not disclose each and every aspect of the present invention as set forth in the subject claims.

In response to the statement in the Reply Brief that the cited references fail to disclose or suggest the claimed aspect of *extending motorized system function until a specific time horizon is reached* based on diagnostic and prognostic information related to system health, the Examiner’s Answer contends that this limitation is not recited in the claims, quoting a passage from the subject claim 36. However, this argument completely ignores that plain fact that the subject claim limitations are replete with references to *health of the motorized system* and the like. In connection with the statement in the

Reply Brief that “Madhavan does not disclose *adjusting a control signal to extend operating life to a specific time horizon* as set forth in the subject independent claims,” the Examiner’s Answer repeats the argument that the claimed *specific time horizon* “is broad limitation (*sic*) which includes various interpretations such as merely ‘extending mission completion.’” From this statement, a conclusion is somehow drawn that “Madhavan explicitly disclose (*sic*) adjusting a control signal to extend operating life to a specific time horizon.” It is again respectfully submitted that, as with McConnell *et al.*, an inherency argument is replied upon, however, as stated above, the mere fact that a certain thing may result from a given set of circumstances is not sufficient to establish inherency.

Thus, Madhavan fails to anticipate or make obvious appellants’ invention as set forth in independent claims 1, 19, 22, and 36 (and claims 2-5, 18-22, 24, 30, 35-38, and 40-41, which depend respectively there from). This rejection should be reversed.

### **III. Rejection of Claims 6-8, 12-14, 25-29, and 42 Under 35 U.S.C. §103(a)**

Claims 6-8, 12-14, 25-29, and 42 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Madhavan (U.S. 6,004,017) in view of Hays *et al.* (U.S. 6,260,004). This rejection should be reversed for at least the following reasons. Neither Madhavan nor Hays *et al.*, alone or in combination, disclose or suggest all of the claimed aspects of the present invention as set forth in the subject claims. As discussed, independent claims 1, 22, and 36 set forth the aspect *of a feedback operation that adjusts a control signal to manipulate system lifetime duration*. Neither of the Examiner’s cited references disclose or suggest such aspects of the claimed invention, as discussed *supra*. Accordingly, it is readily apparent that neither Madhavan nor Hays *et al.*, alone or in combination, disclose or suggest all of the claimed aspects of independent claims 1, 22, and 36 (and claims which depend respectively there from). Reversal of this rejection is respectfully requested.

### **IV. Rejection of Claims 15-17, and 31-34 Under 35 U.S.C. §103(a)**

Claims 15-17 and 31-34 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Madhavan (U.S. 6,004,017) in view of Edison *et al.* (U.S. 5,586,305).

Reversal of this rejection is respectfully requested for at least the following reasons. Neither Madhavan nor Edison *et al.*, alone or in combination, disclose or suggest the present invention as set forth in the subject claims. Claims 15-17 and 31-34 depend from independent claims 1 and 22 respectively. As stated *supra*, Madhavan does not disclose or suggest every limitation set forth in the subject independent claim and Edison *et al.* fails to cure the aforementioned deficiencies of the primary reference. Reversal of this rejection is therefore respectfully requested.

**V. Rejection of Claim 39 Under 35 U.S.C. §103(a)**

Claim 39 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Madhavan (U.S. 6,004,017) in view of Grayson *et al.* (U.S. 5,111,531). Reversal of this rejection is respectfully requested for at least the following reasons. Claim 39 depends from independent claim 36, which, as discussed hereinabove, is not made obvious by Madhavan. Grayson *et al.* fails to overcome the deficiencies of Madhavan with respect to independent claim 36. Accordingly, this rejection should be reversed.

**CONCLUSION**

For at least the above reasons, the claims currently under consideration are believed to be patentable over the cited references. Accordingly, it is respectfully requested that the rejections of claims 1-8, 12-22, and 24-42 be reversed.

If any additional fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Respectfully submitted,  
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